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REMARKS

Applicant thanks the Examiner for the detailed remarks and analysis. Claims 1-6, 8-15, and 17-21 remain under consideration in this application.

The drawings were objected to as not showing a brake pad pivotally mounted relative to a support 22. Further, claims 1, 4-6, 8, 12, 13, 14, 15, 17, 18 and 22 were rejected under 35 U.S.C. §112. Figure 1 includes a brake pad 14 that includes a friction member 18 pivotally supported on a wedge 16. The claims have been amended to clearly define that the friction member 18 is pivotally supported relative to the support 22. Accordingly, the claims now comply with the requirements of 35 U.S.C. §112.

Claims 1-6,8,12,13,14,15,17,18 and 22 were rejected as being obvious over Akita et al. (U.S. 5,775,782) in view of Tamoe U.S. (U.S. 6,112,861) and Tamoe DE (DE-19850678). Claim 1 requires a support pivotally mounted at an angle relative to a rotatable brake member where the angle of the support is variable for controlling a self-energizing gain in braking force. Claim 14 requires the step of changing the angle of a support relative to a rotatable braking member for controlling self-energizing gain in braking force. Claim 19 requires an actuator for varying the angle relative to the angle of the support for controlling a gain component of the braking force.

Akita et al. discloses a hydraulically actuated braking system that includes a wedge to generate self-energizing braking force to compensate for expansion in the hydraulic system. Akita et al. further discloses a control system for varying hydraulic pressure in response to variations in friction between the brake pad and the rotating brake element.

Akita et al. does not disclose varying an angle of a support to control a gain in braking force realized from self-energization. Further, Akita et al. does not disclose a friction member pivotally supported relative to a pivotal support.

The office action proposes modifying Akita et al. with Tamoe U.S. and Tamoe DE to cure this defect. However the proposed combination is not proper as it is not supported by the required suggestion and motivation as there is no benefit to the proposed combination, and the system disclosed in Akita et al. teaches away from the systems of Tamoe U.S. and Tamoe DE. Further, the required suggestion and motivation is not present because the proposed combination would destroy a primary intended operation of the base reference (Akita et al.).

Tamoe U.S. discloses friction members pivotally supported to pivotally movable supports. Tamoe DE discloses a brake for an elevator system that includes a brake member that pivots to engage a brake disk. Akita et al. discloses a hydraulically actuated system that includes a self-energizing feature with the stated purpose of compensating for expansion in the hydraulic lines that reduce braking force (Col 5, lines 29-36). The Akita et al. system includes a controller that further compensates for fluctuations in friction force between the brake pad and the brake disk by controlling fluid pressure generated by a hydraulic pump. (Col 10, lines 12-27).

The Akita et al. system already includes a system for controlling brake force gain and therefore there is no benefit to the modification in view of Tamoe U.S. If there is no benefit, there can be no suggestion and motivation. In this instance, combining the mechanical features of Tamoe U.S. and Tamoe D.E. with the Akita et al. system provides no benefit as the Akita et al. system already includes features for controlling braking force.

Further, the Tamoe U.S. and Tamoe DE references teach away from the proposed combination with the Akita et al. system. Both Tamoe U.S. and Tamoe D.E. disclose braking systems for a hoisting system such as is utilized with an elevator. The Tamoe U.S. and Tamoe DE systems are engaged mechanically and do not require hydraulic force for engagement. The Tamoe U.S. system utilizes a hydraulic cylinder to disengage the brake and a spring to engage the system. Further, these systems are intended as safety devices (Please see copy of automated translation of Tamoe D.E. provided for reference only) and do not require control of a self-energized gain. Accordingly, because the Tamoe D.E. and Tamoe U.S. do not utilize a hydraulic system for engaging the brake, the references teach away from the proposed combination.

Finally, modifying Akita et al. to include the levers of Tamoe U.S. or pivoting brake pad of Tamoe D.E. would destroy a stated purpose of the Akita et al. system. As discussed above, the base reference (Akita et al.) discloses a system for compensating for losses of pressure within a hydraulic system. The proposed modification of Akita et al. in view of Tamoe U.S. and Tamoe D.E. would require the removal of the hydraulic actuation system in favor of the brake levers (3a,3b) of Tomoe U.S. This destroys the very purpose of the Akita et al. system (to improve operation of the hydraulically actuated brake system) and therefore there can be no suggestion or motivation. There can be no suggestion or motivation if the proposed

modification would render the base reference inoperable for its intended purpose, and without some suggestion and motivation a *prima facia* case of obviousness is not supported. In this instance, modifying the Akita et al. hydraulic system with the levers of Tamoe U.S. or Tamoe D.E. would so modify the operation of the Akita et al. system as to render the stated purpose unnecessary and inoperable. Therefore, there can be no suggestion and motivation.

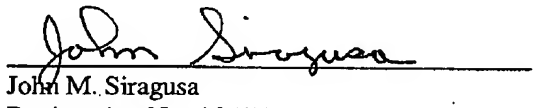
Further, the cited references are from very dissimilar arts and therefore it is possible that the proposed combination is the result of impermissible hindsight reasoning using Applicant's disclosure as a guide. As is certainly appreciated, an obviousness rejection cannot be created by picking and choosing features from unrelated references to meet the claimed limitations. In this instance, the Akita et al. hydraulic brake device is so dissimilar in purpose and operation as compared to the mechanical safety brake systems of the Tamoe references that it is likely that Applicant's disclosure acted as a guide in combining the references instead of the required suggestion and motivation.

For at least these reasons, the proposed combination is not proper and Applicant respectfully requests reconsideration and withdrawal of this rejection.

Accordingly, the claims are believed in condition for allowance. No additional fees are seen to be required. If any additional fees are due, however, the Commissioner is authorized to charge Deposit Account No. 50-1482, in the name of Carlson, Gaskey & Olds, P.C., for any additional fees or credit the account for any overpayment. Therefore, favorable reconsideration and allowance of this application is respectfully requested.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.



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Result Page

Technical area

The invention refers to a double brake safety barrier for elevators or shelf control devices (RBG), with a console mobile in transverse direction to the longitudinal extending of the guide rail, at which two brake shoes arranged at opposite sides of the guide rail are intended, embracing a guide rail for an elevator car, of which one as active brake shoe and the other one than reaction brake shoe serves, whereby the active brake shoe pushes away over a camp eccentric cam arrangement at the console, serving effective in both brake catch directions, as counter bearings.

State of the art

A such brake safety barrier is to be taken for example the DE 196 06 861 A1. If with the reaction brake shoe, D. h. the passive brake shoe a Weichmetall one uses and at the braking with an automatic locking one works, then according to regulations usually the safety barrier with the driving power of the elevator engine or with the human hand at the handwheel of the elevator transmission from the catch can be solved with actuated brake applications. However a braking over tungsten carbide brake shoes is made in particular and with structured brake shoes in connection with automatic locking brake applications, D. h. with so-called positive brake shoes, then is sufficient neither Kraft of the engine nor Kraft applied at the handwheel to solve the safety barrier from the catch.

It is for example well-known from the EP 0,440,839 B1 to plan two catch wedges which make a catching possible upward and downward.

Representation of the invention

It is the technical problem (task) of the invention to develop a double brake safety barrier further of the kind initially specified in such a manner that also with the employment of positive brake shoes, with which the material of the brake shoe entrenches itself into the material of the guide rail, of making a safe loosening possible of the safety barrier from the catch by Kraft of the engine or Kraft at the handwheel of the elevator transmission with simple technical means.

This task is solved according to invention by the characteristics of the requirement 1.

In particularly simple and compact way the double brake safety barrier makes possible when catching upward as when catching downward with a selflocking effect also a safe loosening of the catch according to the regulations. The individual double wedge rocker is tiltable in the console stored and made possible thereby by simply swivelling into the respective catch position catching in both directions. This secures not only a simple and perfect function, but also a compact building method and economical production.

With presence of a tax edge in accordance with requirement 2 a safe possibility exists of swivelling the double wedge rocker with contact of the tax edge with the guide rail into the respective catch direction. If the tax edge is formed by an employment of special material, the possibility exists of selecting the tax edge independently of the remaining material in the way as it is suitable for the certain purpose. So the employment can consist for example of tungsten carbide and have a smooth surface. It is substantial that a pointed edge is present here.

Of the relative to better interception high forces the double wedge rocker can over a pitch circle cylinder surface at an opposite circular cylinder surface of the console push away, whereby the center of these pitch circle cylinder surfaces lies in the drag axis of the double wedge rocker. Thus the entire forces at the drag axis do not have to be taken up and the drag axis can regarding one in the connection with it used Schwenkbolzens with relatively small diameter be implemented, what leads further to a compact building method.

Further favourable arrangements result from further Unteransprüchen.

Short description of the designs

Show:

Fig. 1 a double brake safety barrier in accordance with the invention as side view in the exemption;

Fig. 2 the double brake safety barrier in accordance with Fig. 1 in the brake position downward; and

Fig. 3 the double brake safety barrier in accordance with Fig. 1 in the brake position upward.

Description of a remark example of the invention

The double brake safety barrier represented in the figures possesses one at the outside diameter gekordelten larger clamping eccentric cam SE and one with this firmly connected, D. h. drehfest connected smaller camp eccentric cam LE. Both eccentric cams turn on a bearing journal 3 around an axis of rotation A. Furthermore the represented double brake safety barrier possesses an active brake shoe 2 as well as a double wedge rocker 6 as passive reaction brake shoe. These brake shoes are arranged to both sides of a

guide rail 8 of the elevator. In the figures this guide rail 8 is broken drawn. The brake shoe 2 as active brake shoe rests on the camp eccentric cam LE. The double wedge rocker 6 supports itself as passive brake shoe over compression springs 7 at a feather/spring counter bearing 4 off. The feather/spring counter bearing 4 and the bearing journal 3 are firmly connected by a console 5 in form of a box profile. The double wedge rocker 6 is provided with a central employment 9, which consists of tungsten carbide with smooth surface. This employment 9 forms a pointed tax edge 10. This employment exhibits 6 just like the double wedge rocker even toward perpendicularly to the indication level a certain width dimension.

Further employments 11 and 12 form brake shoe employments, whereby the brake shoe employment 12 is used upward for the brake catching downward and the brake shoe employment 11 for the brake catching, like this Fig. 2 and 3 to infer is. These brake shoe employments have prefer a surface, whereby the longitudinal extending of the scoring in brake direction runs, provided with scoring, D. h. in longitudinal direction of the guide rail 8. These scoring entrenches itself into the material of the guide rail 8 and leads thus to a certain form closure with the guide rail. This leads to such an strong automatic locking that only by the wedge effect the safety barrier with the driving power of the engine or with the human Kraft at the handwheel of the elevator transmission from the catch can be loosened.

The double wedge rocker 6 is swivelingstored in a drag axis 13 by means of a pin. This takes place via the fact that two parallel, lateral carrying sheet metals 14 on the one hand connected by screws 15 with the double wedge rocker 6 are stored firmly and on the other hand on the pin of the drag axis 13. The storage takes place on a supporting piece 16, which within the console 5 against Kraft of the feathers/springs 7 in transverse direction to the guide rail 8 is movable.

The double wedge rocker 6 is provided with a pitch circle cylinder surface 17, with a central arrangement. This pitch circle cylinder surface rests against an opposite circular cylinder surface 18 of the supporting piece 16 and is adjustable opposite this, if the double wedge rocker swivels 6 around the drag axis 13. Thus the actual forces arising when braking are taken up by these pitch circle cylinder surfaces. It would be naturally also possible to hang the double wedge rocker up only at the drag axis 13. This has however disadvantages in such a way that the taps in the drag axis 13 it must have a relatively large diameter in such a manner that he needs more area between the compression springs 7, which would impair the compactness of the entire device.

The center of the pitch circle cylinder surfaces 17, 18 is in the drag axis 13. In this connection the radius R must be selected carefully, so that when brake catching the pitch circle cylinder surface 17 of the double wedge rocker 6 not over the opposite circular cylinder surface 18 slips and leaves these, what with the breaking of the pivot pin would be connected. If the length of the double wedge rocker, measured along the guide rail 8, has for example a length of 139 mm, then the radius R should lie within the range of 50 mm and the wedge angle alpha should amount to about 5 DEG. Generally one can assume the radius should be smaller 60 mm, so that it does not come to breaking the pin,

if this is optimally laid out, or to wearing the same out. Also with it squeezing the compression springs 7 together can occur with the consequence of a change of the friction value by the feather/spring squeezing. This is unwanted, since the friction value must be always the same with the braking. On the other hand the radius R should be more largely 30 mm, so that tilting the double wedge rocker arises with contact of the tax edge 10 at the guide rail 8 in the desired way.

Between the supporting piece 16 and the double wedge rocker 6 reciprocally further compression springs 19, those are the double wedge rocker 6 in the exemption in accordance with Fig. 1 hold.

Fig. 1 shows the double brake safety barrier in its ?exemption?, in which neither the double wedge rocker 6 nor the brake shoe 2 are still the clamping eccentric cam SE with the guide rail 8 in contact.

Fig. the double brake safety barrier shows 2 in the brake position downward, in which during to fast travel of the elevator car driving downward over mechanical connecting links of the clamping eccentric cams SE for example by the speed limiting mechanism so long one turns, until the gekordelte extent surface of the clamping eccentric cam SE and the double wedge rocker with the associated brake shoe 12 affect the guide rail 8. From this time on the clamping eccentric cam SE takes over thereby a stretching of the compression springs 7 that the extent surface USE of the clamping cylinder SE unreels 8 on the guide rail 8 with the movement of the brake safety barrier relative to the being certain guide rail. If the clamping eccentric cam SE loses its contact with the guide rail 8, which has as a consequence that the position of the clamping eccentric cam SE and thus the brake safety barrier does not change for no more with far downward driving elevator car and the brake safety barrier fulfills its function to bring i.e. the elevator car evenly retarding to the stop. In this position the dead center of the camp eccentric cam LE must lie according to the kinematic conditions before the rotation center LCL of the camp eccentric cam, in order to ensure a safe ?outer he catch going?.

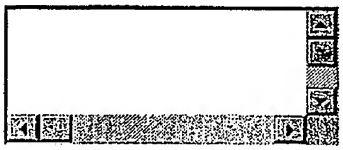
Fig. the brake position shows 3 upward. Through in the opposite direction another course of the curve than cam disc of the trained clamping eccentric cam is used to tricks. Also when catching upward the dead center of the camp eccentric cam must lie according to the kinematic conditions before the rotation center of the camp eccentric cam, in order to ensure a safe ?outer he catch going?.

In order to ensure a lateral stability with the movement of the double wedge rocker 6 and the supporting piece 16, although this is not represented in the designs, in the range of the pitch circle cylinder surface 17 of the double wedge rocker 6 a transverse support rib can be arranged, which slides in a corresponding groove of the opposite circular cylinder surface 18, or in reverse.

If over the eccentric cam arrangement and the console 5 the double wedge rocker 6 in the direction of the guide rail 8 is moved, then first the tax edge 10 in contact with the guide rail 8 arrives. By this contact with simultaneous movement of the console in Fig. 1

upward toward the arrow O or downward toward the arrow U in Fig. 1 tilts automatically the double wedge rocker 6 in each case in in Fig. 2 and/or. Fig. 3 represented brake position.

Thus the double wedge rocker 6 fulfills the brake catching at the same time in both directions and the possibility of a perfect release from the catch as compact part, even if the brake shoes from tungsten carbide penetrate the material of the guide rail positively.



1. Double brake safety barrier for elevators or shelf control devices, with a console (5), mobile embracing a guide rail (8) for an elevator car, in transverse direction to the longitudinal extending of the guide rail (8), to the two brake shoes arranged at opposite sides of the guide rail (8) (2, 6) is intended, of which one (2) serves as active brake shoe and the other one (6) than reaction brake shoe, whereby the active brake shoe (2) pushes away over a camp eccentric cam arrangement effective in both brake catch directions (SE, LE) at than counter bearings the serving console (5), thereby characterized that the reaction brake shoe than double wedge rocker (6) is trained, in the console (5) is swivelingstored.

2. Double brake safety barrier according to requirement 1, by the fact characterized that the two wedge surfaces (11 ', 12 ') of the double wedge rocker (6) gather in a tax edge (10).

3. Double brake safety barrier according to requirement 2, by the fact characterized that the tax edge (10) is formed by an employment (9) of special material.

4. Double brake safety barrier according to requirement 3, by the fact characterized that the employment (9) consists of tungsten carbide.

5. Double brake safety barrier according to requirement 3 and/or 4, by the fact characterized that the employment (9) has a smooth surface.

6. Double brake safety barrier after at least one of the requirements 1 to 5, by the fact characterized that in the two wedge surfaces (11 ', 12 ') at least one brake shoe employment (11; 12), those is arranged the respective requirements with the upward and/or. Downwardcatch are sufficient.

7. Double brake safety barrier according to requirement 6, by the fact characterized that the brake shoe employments (11, 12) exist made of tungsten carbide and has a structured and in particular grooved brake surface texture.

8. Double brake safety barrier after at least one of the requirements 1 to 7, by the fact characterized that the double wedge rocker (6) pushes away over a pitch circle cylinder surface (17) at an opposite circular cylinder surface (18) of the console (5), whereby the center of these pitch circle cylinder surfaces is appropriate for the double wedge rocker (6) in the drag axis (13).

9. Double brake safety barrier according to requirement 8, by the fact characterized that the double wedge rocker (6) is swivelingstored into the opposite circular cylinder surface (18) forming supporting piece (16), which supporting piece (16) together with the double wedge rocker (6) against Kraft at least one feather/spring (7), which at the console (5) and at the supporting piece (16) pushes away, opposite the console (5) in transverse direction to the guide rail (8) is movably stored.

10. Double brake safety barrier according to requirement 9, by the fact characterized that between the supporting piece (16) and the back of the double wedge rocker (6) both sides the drag axis at least one supporting feather/spring (19) is arranged.

11. Double brake safety barrier according to requirement 9 and/or 10, by the fact characterized that in the range of the pitch circle cylinder surface (17) of the double wedge rocker (6) a transverse support rib is arranged, which slides in a corresponding groove of the opposite circular cylinder surface (18), or turned around.